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State of Utah

DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Water Rights
KENT L. JONES
State Engineer/Division Director

Glendale Irrigation
c/o Dellas Sorenson, Mike Chamberlain
PO Box 127
Orderville, UT 84758- 0127

Dear Mike & Dellas:

On July 12, 2011I I conducted a calibration inspection of most of the East Fork of the Virgin Distribution System, accompanied by the new Water Commissioner, Jeff Medlin,. For the Glendale diversion, this was a follow up to the October 7, 2008 inspection conducted with the previous commissioner, Gerry Hoyt. A second inspection around that time was done on July 21, 2009. A number items pointed out at that time still require attention by Glendale Irrigation.

Follow up on the previous inspection: The new grating cover over the pipe entrance has been in place for a few years now, but is in need of reinforcement; a second piece of steel under the grate is needed and must be substantial enough to provide additional support without excessive flexing. Since this is a safety issue, please see that this is done soon. The booms have been effective in mitigating the waves on the staff gauge; however buildup on the booms should be cleaned yearly (or replaced).

The most recent inspection revealed some new concerns regarding siltation and staff gauge calibration:

CLEANING: The lack of routine cleaning of the sluice has caused excessive siltation buildup along the sides and bottom of the sluice device. The silt buildup, accentuates the preferential flow paths in the structure, making measurement inaccurate. I highly recommend that a routine (at least monthly, but preferably twice monthly) cleaning (sluicing), that includes scraping the sides of the structure with a shovel to remove siltation and buildup from inside the sluice basin structure. The sediment slug load on the river is significant when done infrequently. Sluicing regularly (2x per month) reduces the sedimentation load that affects all successive downstream users and is when done more often, is better for the Fish. It is the responsibility of the Diversion owners (Glendale Irrigation Company) to maintain their diversion and do this work. Although the Deputy Commissioner may have provided this service in the past, it is not part of the water commissioner's job to provide this service. Less frequent cleaning may be required as the sediment load decreases later in the irrigation season.

CALIBRATION: I am not sure what weir table had been used in the past but this is a Cipoletti style weir (with slanted sides), therefore I have enclosed the correct corresponding 48" weir table. As part of the calibration inspection, we measured the Cipoletti weir, it measured 49" not 48", resulting in a standing +2% error (more flow than what chart reads). Conversely, the staff gauge was checked for level and determined to be mounted 1/10' too low. This low mounting "over accounts" for the water on the staff gauge with less water being delivered than what the staff gauge measurement would indicate.

When doing the calculation on the base flow right of 7.23 CFS for Glendale and including the .5 + .2 CFS for Barry Ford, This has resulted in reducing the actual flow to about -20% (less flow than the gauge was reading). The 49" to 48" width increase of 2% doesn't offset the staff gauge being mounted too low, that causes a -20% error and decrease in amount of flow delivered.

To provide a more accurate readings, the staff gauge requires re-mounting, at a time when the sluice basin is drained, which will help to check level and insure the Staff gauge is mounted at the elevation crest of the weir. You should contact Jeff Medlin, the Water Commissioner [(435) 648-2899 or (937) 369-8612)] for his assistance. The weir crest should be checked for level too. Jeff will work with you on insuring that the Gauge is mounted correctly, thus insuring Glendale Irrigation receives the correct allotment of water and that it is measured properly, henceforth.

Once the staff gauge has been mounted to the correct height, and using the combined Glendale+ Barry Ford flow of 7.93cfs, the gauge should be reading at .705' to provide 100% flow amount. This should provide more water commensurate with the combined rights at this diversion.

Thank you in advance for your cooperation in attending to the outstanding matters covered in this letter. If you have any questions, please contact me by phone at 801-538-7430 or by e-mail at MikeSilva@Utah.Gov.

Dated this 28th day of July 2011

Mike Silva

Mike Silva
Distribution Engineer

cc: Distribution File
Barry Ford, PO Box 52, Glendale, UT 84729
Kurt Vest, Regional Engineer
Jeff Medlin, Water Commissioner
Gerry Hoyt, Water Commissioner
Clarence Spencer, Deputy Commissioner

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Table A7-5. Discharge of standard Cipolletti weirs in ft³/sec. Shaded entries determined experimentally. Others computed from the formula $Q=3.367Lh_1^{1.5}$

Head	Weir Length, L, ft						
H, ft	0.5	1.0	1.5	2.0	3.0	4.0	5.0
-----	-----	-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----
.18	.129	-----	-----	-----	-----	-----	-----
.19	.139	-----	-----	-----	-----	-----	-----
.20	.151	.301	.452	.602	.903	1.20	1.51
.21	.162	.324	.486	.648	.972	1.30	1.62
.22	.174	.347	.521	.695	1.04	1.39	1.74
.23	.186	.371	.557	.743	1.11	1.49	1.86
.24	.200	.396	.594	.792	1.19	1.58	1.98
.25	.214	.421	.631	.842	1.26	1.68	2.10
.26	-----	.446	.670	.893	1.34	1.79	2.23
.27	-----	.472	.709	.945	1.42	1.89	2.36
.28	-----	.499	.748	.998	1.50	2.00	2.49
.29	-----	.526	.789	1.05	1.58	2.10	2.63
.30	-----	.553	.830	1.11	1.66	2.21	2.77
.31	-----	.581	.872	1.16	1.74	2.32	2.91
.32	-----	.609	.914	1.22	1.83	2.44	3.05
.33	-----	.638	.957	1.28	1.91	2.55	3.19
.34	-----	.668	1.00	1.34	2.00	2.67	3.34
.35	-----	.697	1.05	1.39	2.09	2.79	3.49
.36	-----	.727	1.09	1.45	2.18	2.91	3.64
.37	-----	.758	1.14	1.52	2.27	3.03	3.79
.38	-----	.789	1.18	1.58	2.37	3.15	3.94
.39	-----	.820	1.23	1.64	2.46	3.28	4.10
.40	-----	.852	1.28	1.70	2.56	3.41	4.26
.41	-----	.884	1.33	1.77	2.65	3.54	4.42
.42	-----	.916	1.37	1.83	2.75	3.67	4.58
.43	-----	.949	1.42	1.90	2.85	3.80	4.75
.44	-----	.983	1.47	1.97	2.95	3.93	4.91
.45	-----	1.02	1.52	2.03	3.05	4.07	5.08
.46	-----	1.05	1.58	2.10	3.15	4.20	5.25
.47	-----	1.08	1.63	2.17	3.25	4.34	5.42
.48	-----	1.12	1.68	2.24	3.36	4.48	5.60
.49	-----	1.16	1.73	2.31	3.46	4.62	5.77
.50	-----	1.20	1.79	2.38	3.57	4.76	5.95
.51	-----	-----	-----	2.45	3.68	4.91	6.13
.52	-----	-----	-----	2.53	3.79	5.05	6.31
.53	-----	-----	-----	2.60	3.90	5.20	6.50
.54	-----	-----	-----	2.67	4.01	5.34	6.68
.55	-----	-----	-----	2.75	4.12	5.49	6.87
.56	-----	-----	-----	2.82	4.23	5.64	7.05
.57	-----	-----	-----	2.90	4.35	5.80	7.24
.58	-----	-----	-----	2.97	4.46	5.95	7.44
.59	-----	-----	-----	3.05	4.58	6.10	7.63
.60	-----	-----	-----	3.13	4.69	6.26	7.82

Table A7-5 [continued]. Discharge of standard Cipolletti weirs in ft³/sec. Shaded entries determined experimentally. Others computed from the formula $Q=3.367Lh_1^{1.5}$

Head	Weir Length, L, ft				Head	Weir Length, L, ft			Head	L
H, ft	2.0	3.0	4.0	5.0	H, ft	3.0	4.0	5.0	H, ft	5.0
0.61	3.21	4.81	6.42	8.02	1.06	11.3	14.7	18.4	1.51	31.2
.62	3.29	4.93	6.57	8.22	1.07	11.4	14.9	18.6	1.52	31.5
.63	3.37	5.05	6.73	8.42	1.08	11.6	15.1	18.9	1.53	31.9
.64	3.45	5.17	6.90	8.62	1.09	11.7	15.3	19.2	1.54	32.2
.65	3.53	5.29	7.06	8.82	1.10	11.9	15.5	19.4	1.55	32.5
.66	3.61	5.42	7.22	9.03	1.11	12.1	15.8	19.7	1.56	32.8
.67	3.69	5.54	7.39	9.23	1.12	12.2	16.0	20.0	1.57	33.1
.68	3.81	5.66	7.55	9.44	1.13	12.4	16.2	20.2	1.58	33.4
.69	3.90	5.79	7.72	9.65	1.14	12.5	16.4	20.5	1.59	33.8
.70	3.98	5.92	7.89	9.86	1.15	12.7	16.6	20.8	1.60	34.1
.71	4.06	6.04	8.06	10.1	1.16	12.9	16.8	21.0	1.61	34.4
.72	4.15	6.17	8.23	10.3	1.17	13.0	17.0	21.3	1.62	34.7
.73	4.24	6.30	8.40	10.5	1.18	13.2	17.3	21.6	1.63	35.0
.74	4.33	6.43	8.57	10.7	1.19	13.4	17.5	21.9	1.64	35.4
.75	4.42	6.56	8.75	10.9	1.20	13.6	17.7	22.1	1.65	35.7
.76	4.51	6.69	8.92	11.2	1.21	13.7	17.9	22.4	1.66	36.0
.77	4.60	6.82	9.10	11.4	1.22	13.9	18.1	22.7	1.67	36.3
.78	4.69	6.96	9.28	11.6	1.23	14.1	18.4	23.0		
.79	4.78	7.09	9.46	11.8	1.24	14.3	18.6	23.2		
.80	4.87	7.23	9.64	12.0	1.25	14.4	18.8	23.5		
.81	4.96	7.36	9.82	12.3	1.26	14.6	19.0	23.8		
.82	5.05	7.50	10.0	12.5	1.27	14.8	19.3	24.1		
.83	5.14	7.64	10.2	12.7	1.28	15.0	19.5	24.4		
.84	5.24	7.78	10.4	13.0	1.29	15.2	19.7	24.7		
.85	5.34	7.92	10.6	13.2	1.30	15.4	20.0	25.0		
.86	5.44	8.06	10.7	13.4	1.31	15.5	20.2	25.2		
.87	5.54	8.20	10.9	13.7	1.32	15.7	20.4	25.5		
.88	5.64	8.34	11.1	13.9	1.33	15.9	20.7	25.8		
.89	5.74	8.48	11.3	14.1	1.34	16.1	-----	26.1		
.90	5.84	8.62	11.5	14.4	1.35	16.2	-----	26.4		
.91	5.94	8.77	11.7	14.6	1.36	16.4	-----	26.7		
.92	6.04	8.91	11.9	14.9	1.37	16.6	-----	27.0		
.93	6.14	9.06	12.1	15.1	1.38	16.8	-----	27.3		
.94	6.25	9.21	12.3	15.3	1.39	17.0	-----	27.6		
.95	6.36	9.35	12.5	15.6	1.40	17.2	-----	27.9		
.96	6.47	9.50	12.7	15.8	1.41	17.4	-----	28.2		
.97	6.58	9.65	12.9	16.1	1.42	17.6	-----	28.5		
.98	6.69	9.80	13.1	16.3	1.43	17.8	-----	28.8		
.99	6.80	9.95	13.3	16.6	1.44	18.0	-----	29.1		
1.00	6.91	10.1	13.5	16.8	1.45	18.2	-----	29.4		
1.01	-----	10.5	13.7	17.1	1.46	18.3	-----	29.7		
1.02	-----	10.6	13.9	17.3	1.47	18.5	-----	30.0		
1.03	-----	10.8	14.1	17.6	1.48	18.7	-----	30.3		
1.04	-----	10.9	14.3	17.9	1.49	18.9	-----	30.6		
1.05	-----	11.1	14.5	18.1	1.50	19.1	-----	30.9		